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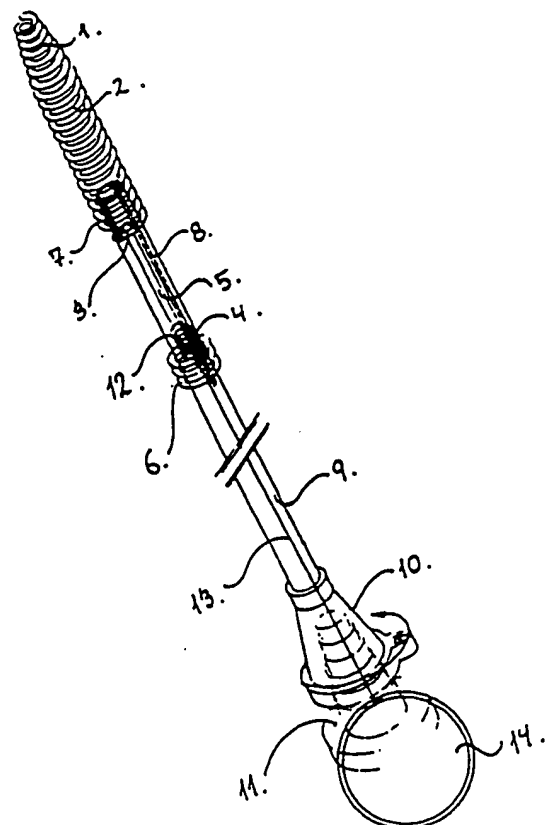
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/DK88/00146 (22) International Filing Date: 2 September 1988 (02.09.88) (31) Priority Application Number: 4587/87 (32) Priority Date: 2 September 1987 (02.09.87) (33) Priority Country: DK (71) Applicant (for all designated States except US): ENGINEERS & DOCTORS A/S [DK/DK]; Købmagergade 55, DK-1150 København K (DK). (71)(72) Applicants and Inventors: JACOBSEN, Erik [DK/DK]; Holger Danskes Vej 19, 3.tv., DK-2000 Frederiksberg (DK). NIEBEN, Ole, Gyrling [DK/DK]; Peblinge Døssering 18, 3.tv., DK-2200 København N (DK). HARBOE, Henrik [DK/DK]; Tølløsevej 39, DK-2700 Brønshøj (DK).</p>		<p>(74) Common Representative: ENGINEERS & DOCTORS A/S; Købmagergade 55, DK-1150 København K (DK). (81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BG, BJ (OAPI patent), BR, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CM (OAPI patent), DE, DE (European patent), DK, FI, FR (European patent), GA (OAPI patent), GB, GB (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (European patent), NO, RO, SD, SE, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent), US. Published With international search report. With amended claims. In English translation (filed in Danish).</p>

(54) Title: DEVICE FOR THE PLACING OF A PARTIAL CATHETER IN A BODY CAVITY

(57) Abstract

Device consisting of an auxiliary catheter (9), a fastening element (13), and a blocking device (11), designed in such a way that a partial catheter (2) can be mounted and secured at the end of the auxiliary catheter until the partial catheter has been placed in the desired position in a body cavity, especially the urethra, after which the partial catheter can be detached from the auxiliary catheter by manipulation of the blocking device and the fastening element, so that only the partial catheter is left in the desired position in the body cavity.



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-1-

DEVICE FOR THE PLACING OF A PARTIAL CATHETER IN A BODY CAVITY.

The invention concerns a device comprising an auxiliary catheter and a fastening element with a blocking device for the placing of a partial catheter in a body cavity.

- 5 The invention chiefly concerns an instrument for the placing of a partial catheter in the form of a spirally coiled metal wire in the urethra in men and especially in the part of the urethra that is located in the prostate. It will also be possible to apply the device according to
- 10 the invention for the placing of partial catheters in other body cavities such as the oesophagus, the biliary passage, the intestine, or the trachea.

- Equipment for the placing of partial catheters in e.g. the
- 15 biliary passage is known. A considerable disadvantage in the equipment already known is that it does not comprise an independent device for securing the partial catheter during the placing procedure. A further disadvantage in the equipment already known is that the equipment ends
- 20 where the partial catheter begins, so that a very flexible partial catheter and particularly a spirally coiled metal wire catheter is very unstable during the process of placing.

- 25 The purpose of the present invention is to eliminate these disadvantages.

- 2 -

This purpose is achieved in accordance with the invention by means of an instrument which is characteristic in that a flexible auxiliary catheter, preferably made of a plastic material, which is partly slotted at one end, is introduced into the partial catheter, and that the partial catheter is secured in its position in relation to the auxiliary catheter by means of a fastening element, preferably made of stainless steel, which is led through the auxiliary catheter up to the slotted part, where a spirally coiled part of the fastening element clutches the part of the partial catheter that is placed centrally in the auxiliary catheter as a consequence of the slotting of the auxiliary catheter.

The auxiliary catheter and the fastening element are adjusted to each other in such a way that the fastening element sticks out of the catheter at the opposite end from the slotting, whereby the auxiliary catheter and the fastening element can be manipulated in relation to each other by rotary movements or pulling/pushing movements.

If the interior of the fastening element is suitably shaped, a movement of the fastening element will imply that it is detached from the partial catheter, after which the auxiliary catheter together with the fastening element can be pulled out of the partial catheter and after that out of the urethra.

When the equipment is used in accordance with the invention for the placing of a spirally coiled metal wire catheter in the urethra in a man, the placing procedure is carried out mainly under local anesthesia of the urethra and under indirect visualization of the position of the partial catheter by means of ultra-sound or radioscopy. In the last-mentioned case the auxiliary catheter and the

- 3 -

fastening element can be provided with one or more radiopaque markers.

5 In the following the invention will be described in greater detail with reference to the drawing, where

- 10 Fig. 1 shows a perspective picture of a preferred embodiment of a partial catheter.
- Fig. 2 shows a perspective picture of a preferred embodiment of the auxiliary catheter.
- 15 Fig. 3 shows a perspective picture of a preferred embodiment of a blocking device for the fastening element in relation to the auxiliary catheter and the partial catheter.
- 20 Fig. 4 shows a perspective picture of a preferred embodiment of the fastening element.
- 25 Fig. 5 shows a perspective picture of all the assembled parts of a preferred embodiment of the device in accordance with the invention.
- 30 In the drawing 1 indicates a tapered end coil of a spirally coiled metal wire catheter 2, preferably made of stainless, acid-resisting steel with a coating of gold. 3 and 4 indicate rods bent radially to the centre of the catheter and connected by a longitudinal, preferably 20 mm
- 35 long rod 5. The rods 3 and 4 are preferably shifted 180

- 4 -

degrees in relation to each other. 6 indicates final turns in the lower end of the spiral. 7 and 8 indicate partial, longitudinal slots in the upper end of the auxiliary catheter, preferably made in such a way that the one slot 7 is seven mm long and more than 20 mm shorter than the other slot 8, and that the two slots 7 and 8 are shifted 180 degrees in relation to each other, whereby it becomes possible for the two rods 3 and 4 to slide down into the slots. When the upper rod 3 slides down to the bottom of a preferred embodiment of the slot 7, further introduction of the auxiliary catheter 9 into the partial catheter 2 is stopped. 10 indicates a conical form of the lower end of the auxiliary catheter 9. 11 shows a funnel in the form of a stepped truncated cone, where the external taper of the cone is the same as the taper of the internal wall of the conical form 10 of the lower end of the catheter 9. 12 shows a spirally coiled form of the upper end of the fastening element, preferably made of one continuous piece of stainless steel wire. The spirally coiled part 12 is preferably made as five counter-clockwise turns with an outer diameter allowing the spirally coiled part 12 to be moved freely backwards and forwards in the lumen of the auxiliary catheter. The turns of the spirally coiled part 12 have a pitch and an internal diameter enabling the spiral to be screwed up around the lower part of the longitudinal rod 5 of the partial catheter 2 by axial rotation of the fastening element 13. If the length of the auxiliary catheter 9 is adjusted to the length of the fastening element 13, a 900 degrees screwing movement in order to connect the spiral 12 and the rod 5 will imply that the rod 3 is drawn tightly to the bottom of the slot 7, where it is stopped, while at the same time the fastening element 13 sticks five mm out of the conical opening 10 of the auxiliary catheter 9. 14 indicates a disc-shaped handle preferably made of a plastic material

- 5 -

cast around the lower end of the fastening element 13. After the mounting further rotation of the fastening element 13 is prevented by the funnel 11 being pressed partly into the interior of the conical part 10 of the auxiliary catheter 9, so that the disc-shaped handle 14 is
5 blocked. The blocking is further secured by the fact that after the mounting much more than five mm of the funnel 11 protrudes from the conical part 10 of the auxiliary catheter 9, so that rotation of the handle is blocked.

- 6 -

PATENT CLAIMS

1. Device for the placing of a partial catheter in a body cavity, comprising an auxiliary catheter (9), a fastening element (13) and a blocking device (11), characterized in that the auxiliary catheter (9) is provided at one end with one or more longitudinal slots (7 and 8) in such a way that rod-shaped parts (3 and 4) of the partial catheter (2) can be mounted in the slot/slots (7 and 8), and that the fastening element (13) is so dimensioned that it can be moved backwards and forwards in the lumen of the auxiliary catheter (9) and clutch the part or parts (5) of the partial catheter (2) that is/are placed in the lumen of the auxiliary catheter (9), and that the blocking device (11) is shaped in such a way that the fastening element (13) does not unintentionally loosen its grip of the partial catheter (2).
2. Device according to claim 1, characterized in that the slots have different lengths.
3. Device according to claims 1 and 2, characterized in that the slots are shifted 180 degrees in relation to each other.
4. Device according to claim 1, characterized in that the fastening element is spirally coiled at one end.
5. Device according to claim 1, characterized in that the fastening element consists of a torsionally stable wire.

- 7 -

6. Device according to claim 4, characterized in that the wire is made of stainless steel.

5 7. Device according to claim 1, characterized in that the auxiliary catheter is made of a soft and flexible material.

10 8. Device according to claim 1, characterized in that the blocking device consists of an externally conical element and a funnel with the same taper, so that the cone can be pressed into the funnel and thereby secure a wire between the two parts, and where the wire is provided with a fixed plate, which prevents rotation of the wire as it is blocked by the part of the cone that
15 protrudes from the funnel when the cone and the funnel have been pressed together.

20 9. Device according to claims 1, 3, 4, 5 and 8, characterized in that a spirally coiled partial catheter with radially arranged rods and a central, longitudinal rod is connected with a spirally coiled part of the fastening element by means of a spiral movement, while at the same time an auxiliary catheter provided with longitudinal slots prevents rotary displacement of
25 the partial catheter in relation to the auxiliary catheter as the radially arranged rods of the partial catheter are secured by the slots. At the same time, rotary displacement and axial displacement of the fastening element in relation to the auxiliary catheter are
30 prevented by the blocking device according to claim 8.

AMENDED CLAIMS

[received by the International Bureau on 16 January 1989 (16.01.89)
new claims 10-12 added (1 page)]

10. Means for situating a partial catheter in a
5 body cavity, c h a r a c t e r i z e d in that the
partial catheter (2) consists of a metal thread
coiled to a spiral and coated.

11. Means according to claim 10, c h a r a c t e -
10 r i z e d in that the partial catheter has a conic
shape at end (1) and where the coiled threads
consequently are coiled in a smaller diameter
overlapping the thread before.

12. Means for the placing of a partial catheter in
15 a body cavity, comprising an auxiliary catheter
(9), a fastening element (13) and a blocking
device (11), c h a r a c t e r i z e d in that the
auxiliary catheter (9) is loosely connected to the
20 partial catheter (2), and that the fastening
element (13) is closely connected to the partial
catheter (2) in such a way that the auxiliary
catheter (9) and the partial catheter (2) cannot
25 separate before the fastening element (13) is
activated, in that such activation is limited by a
blocking device (11), which have to be manipulated
before activation of the fastening element (13) is
possible.

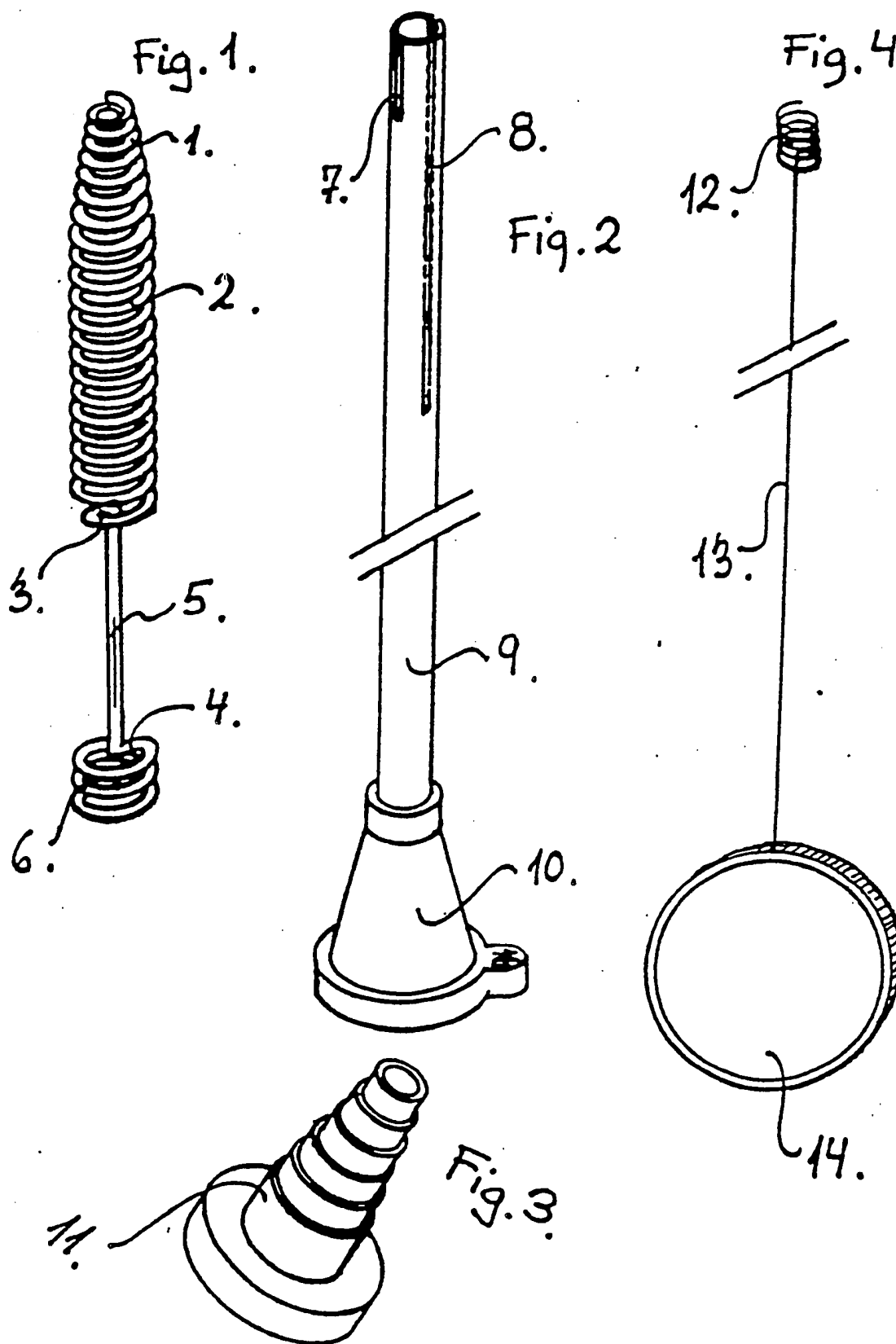
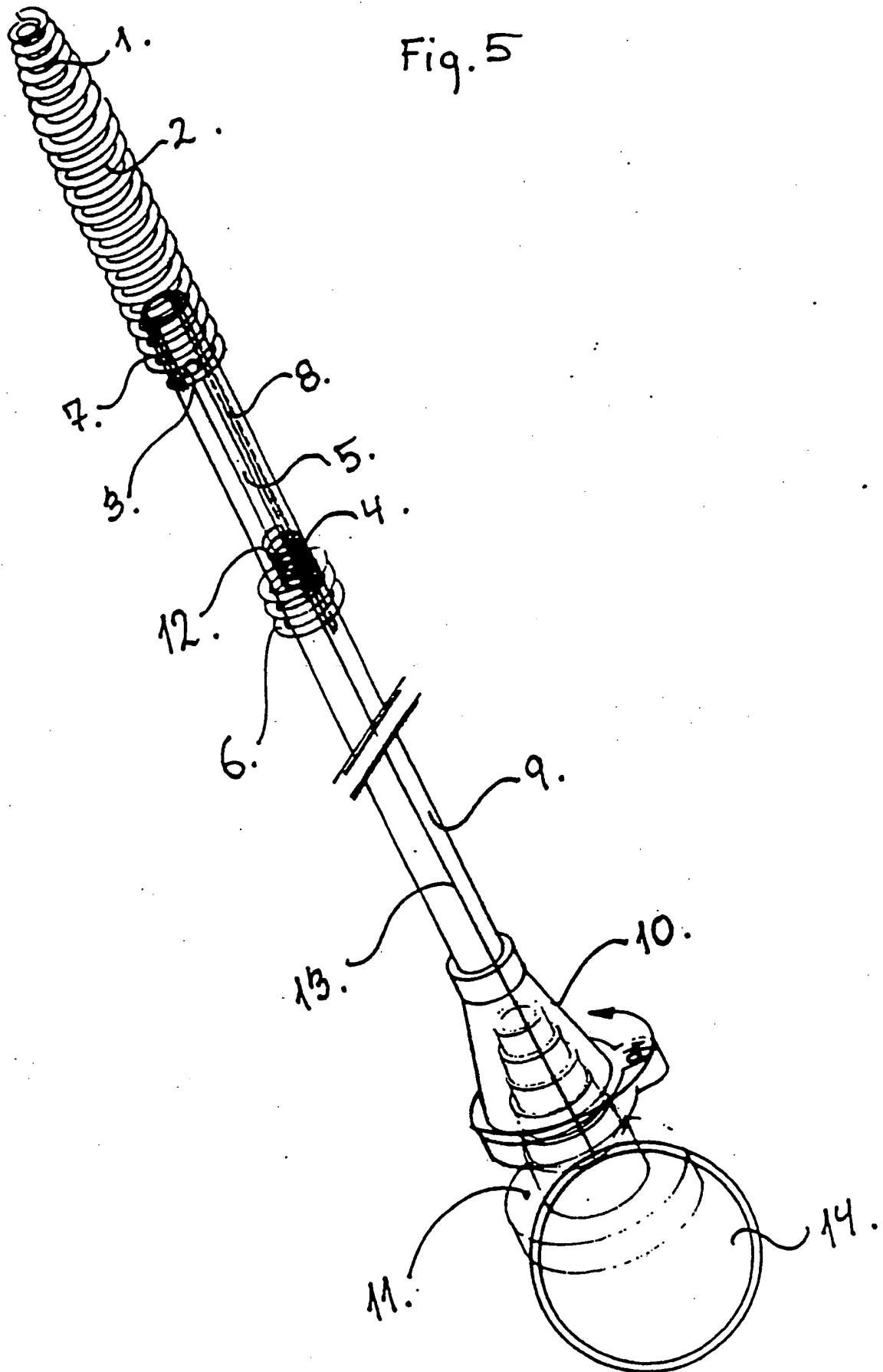


Fig. 5



INTERNATIONAL SEARCH REPORT

International Application No. PCT/DK88/00146

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) * According to International Patent Classification (IPC) or to both National Classification and IPC 4 <div style="margin-top: 5px;">A 61 M 25/00</div>								
II. FIELDS SEARCHED <div style="text-align: center; margin-top: 5px;">Minimum Documentation Searched 7</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 30%; padding: 5px;">Classification System</th> <th style="padding: 5px;">Classification Symbols</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">IPC 4</td> <td style="padding: 5px;">A 61 F 2/04, A 61 M 25/00</td> </tr> <tr> <td style="padding: 5px;">US C1</td> <td style="padding: 5px;">3:1, 128:348-350; 604:53, 104-109, 158-171; 604:263, 264; 623:12</td> </tr> </tbody> </table> <div style="margin-top: 5px; text-align: center;"> Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched 8 </div> <div style="margin-top: 10px; padding: 5px;"> SE, NO, DK, FI classes as above </div>			Classification System	Classification Symbols	IPC 4	A 61 F 2/04, A 61 M 25/00	US C1	3:1, 128:348-350; 604:53, 104-109, 158-171; 604:263, 264; 623:12
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III. DOCUMENTS CONSIDERED TO BE RELEVANT 9 <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 10%; padding: 5px;">Category *</th> <th style="width: 70%; padding: 5px;">Citation of Document, 11 with indication, where appropriate, of the relevant passages 12</th> <th style="width: 20%; padding: 5px;">Relevant to Claim No. 13</th> </tr> </thead> <tbody> <tr style="height: 300px;"> <td></td> <td></td> <td></td> </tr> </tbody> </table>			Category *	Citation of Document, 11 with indication, where appropriate, of the relevant passages 12	Relevant to Claim No. 13			
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<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>* Special categories of cited documents: 16</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p> </div> </div>								
IV. CERTIFICATION <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 50%; padding: 5px;"> Date of the Actual Completion of the International Search <div style="margin-top: 5px;">1988-12-06</div> </td> <td style="width: 50%; padding: 5px;"> Date of Mailing of this International Search Report <div style="margin-top: 5px;">1988-12-05</div> </td> </tr> <tr> <td style="width: 50%; padding: 5px;"> International Searching Authority <div style="margin-top: 5px;">Swedish Patent Office</div> </td> <td style="width: 50%; padding: 5px;"> Signature of Authorized Officer <div style="margin-top: 5px;"> Leif Vingård </div> </td> </tr> </table>			Date of the Actual Completion of the International Search <div style="margin-top: 5px;">1988-12-06</div>	Date of Mailing of this International Search Report <div style="margin-top: 5px;">1988-12-05</div>	International Searching Authority <div style="margin-top: 5px;">Swedish Patent Office</div>	Signature of Authorized Officer <div style="margin-top: 5px;"> Leif Vingård </div>		
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